

Participant Feedback on Biomass

Please submit your responses to MMattu@arb.ca.gov by March 5, 2009

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Sector: _Biomass Power Generation_____

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- 1. What principles and criteria should guide California's biomass definition for the purpose of reporting and inclusion/exclusion of fuels under the cap?**

__Biomass fuel is actually very simple to define. Under the FERC definition, it is any organic matter not related to fossil fuels. ARB could define biomass as broadly as possible so as to maximize the benefits of the utilization of biomass as a partial solution to the buildup of greenhouse gases. ARB should avoid attempting to insert other qualifiers into the definition in order to accomplish other perceived social issues, such as sustainability or treated wood. These are properly the province of other agencies, whether they be the local air quality regulators, Cal Fire or the US Forest Service. If you attempt to limit the materials used for other reasons, you are venturing into territory in which you have no established expertise, and in which other regulatory bodies have such expertise. Keep the definition as broad and simple as possible. We all know what biomass is.

- 2. Should the ARB definition take into account other working definitions?
Consistency across RPS, RFS, LCFS, and WCI**

__Actually, there is little to gain by using other definitions. All were compromises at some point that only served to narrow the field of acceptable material. You cannot recreate the conditions under which those compromises were arrived at, so it is just best of stick with a definition that is scientific and easily understood._____

3. What reporting provisions should be considered regarding data collection, measurement, emission factors, etc.?

 Biomass utilization, as you know, generates only biogenic carbon emissions, and so should be reported separately from fossil fuel carbon emissions. In terms of greenhouse gas emissions, you want the maximum amount of biomass combusted for energy uses of all kinds as a replacement for fossil fuels. Emission factors for biomass combustion are clearly not appropriate, as the end result will be that less biomass will be combusted as some projects will be unable to measure up to the standard and thus will not get done. One idea would be to set a benchmark efficiency for biomass combustion, and those exceeding that benchmark, either through combined heat & power applications or through new technology, would be awarded additional offset credits.

You want to encourage the maximum use of biomass, not discourage it. When the carbon negative benefits of efficient biomass combustion are counted in, this becomes even more true.

4. Other Comments

 California is blessed with vast amounts of biomass, most of which is not used to offset fossil fuels, but could be. What it would seem you want to do is incentivize the maximum amount of biomass use. This use can be in simple heating systems as an offset to natural gas use, or in complex combined heat & power applications that provide both the internal fossil fuel offset as well as the displacement of firm fossil fueled electric generation. From a greenhouse gas perspective, the worst thing you can do is restrict the field of acceptable biomass. I understand that there is a natural tendency to worry over such things as old growth timber, metal emissions from the teardown of old

February 18, 2009

buildings, or the sustainability of the forest against the onslaught of biomass use. But rest assured, particularly in California, there are agencies whose primary mission is to prevent the very downsides that I have listed. Also, though I hesitate to mention it, there are economic principles that come into play that rule out many biomass uses, such as old growth timber. Your job is to devise a system that most cost effectively lowers greenhouse gas emissions in California. Biomass can be a key component in that mission, and you certainly gain nothing but some kudos from a very narrow environmental constituency by unnecessarily restricting biomass use by definition.

Greenhouse Gas Reporting for a Cap-and-Trade Program
Essential Elements for Reporting Biomass
March 5, 2009

In response to the February 18, 2009 discussion on biomass, Weyerhaeuser Company submits the following comments:

1. What principles and criteria should guide California's biomass definition for the purpose of reporting and inclusion/exclusion of fuels under the cap?

The carbon neutrality of biofuels and other biomass fuels is fully recognized by the scientific community. The Intergovernmental Panel of Climate Change, the United States Environmental Protection Agency, the WRI/WBCSD protocols, The Climate Registry, and other internationally recognized climate policy groups have concluded that greenhouse gas emissions totals should not include emissions of CO₂ associated with the combustion of renewable and recurring biomass. As a result, biomass is often referred to as carbon (CO₂) neutral. Operationally "although these fuels do emit CO₂, in the long run the CO₂ emitted from biomass consumption does not increase atmospheric CO₂ concentrations if the biogenic carbon emitted is offset by the growth of new biomass."¹ It is assumed that the carbon released during the consumption of biomass is recycled as U.S. forests and crops regenerate, causing no net addition of CO₂ to the atmosphere.² The state of California should fully recognize the carbon neutrality of biomass fuels.

With that said, we support a broad, inclusive definition. A broad definition would promote the positive carbon-neutral and environmental benefits of energy derived from products and byproducts from industries such as agriculture and forest products. Biomass is a renewable, natural resource that is and will be part of the solution for a clean and cost-effective energy economy. Therefore, due to its biogenic origin, biomass should be reported separately. Any reporting protocol should not include CO₂ emissions from the combustion of biomass-derived fuels in determining if the threshold for reporting has been triggered.

Finally, we offer up the following as an example of a good working biomass definition that is broad and inclusive:

Biomass includes any *organic products and by-products derived from trees, plants and other biological organic matter, including limbs, bark, and other cellulosic material, organic byproducts from wood pulping, and other biologically derived materials including organic fibers and wastewater treatment solids.*

¹ US GHG Inventory to UNFCCC (1990-2004) page 3-11, Box 3-2 (2006 Submission)
http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/3734.php

² US GHG Inventory to UNFCCC (1990-2004) Energy 3-0 (2006 Submission)
http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/3734.php

**2. Should the ARB definition take into account other working definitions?
(Consistency across RPS, RFS, LCFS, and WCI)**

As it currently stands, there are numerous definitions of biomass written into both federal and state programs so "consistency" is impossible to achieve. We believe that the most important thing is to put in place a broad and inclusive definition of biomass, as outlined in the first question. We strongly oppose adopting the biomass definition in the federal Renewable Fuel Standard, put in place by EISA 2007. This definition is unnecessarily narrow because it excludes biomass feedstock from, among other things: national forests, any non-plantation forest (a definition which is highly variable), and any non-tree biomass in a forest. This definition is so exclusive it will, unless changed, hinder investment in cellulosic biofuel technology (e.g., cellulosic ethanol), which is expected to reduce GHG emissions significantly compared to gasoline on an energy equivalent basis. Although we support life cycle assessment in general, accounting for the impact of indirect land-use change is complex and inconsistent with expectations for other fuels. WCI's definition of biomass is also too narrow. We recommend the definition in the California Renewable Portfolio Standard, which includes "any organic material not derived from fossil fuels."

3. What reporting provisions should be considered regarding data collection, measurement, emission factors, etc.?

Using fuel and energy consumption (activity) data is a generally accepted method for calculating emissions, as is the use of fuel purchases records and vendor supplied fuel carbon content data. Quantities recorded in fuel purchase records are typically at least as accurate, if not more so, than industrial fuel metering devices installed at combustion sources (fuel vendors have an economic interest in accurate delivery quantification). When combined with adjustments based on fuel stock changes at the facility, activity data derived from purchase records can be quite accurate and should be allowed for emission estimation purposes. This approach is recognized by and consistent with the guidance in the WRI/WBCSD GHG Protocol Corporate Accounting and Reporting Standard, 2004 Revised Edition, and the ISO 14064.1, Quantification.

The California reporting protocol should specifically indicate that emissions may be calculated on an aggregate mill-wide basis and that unit-specific reporting is not required. Many paper mills receive energy through a single common system (e.g., single metered main natural gas header). The energy is then distributed to individual combustion units. Mill accounting systems aggregate the fuel delivered for all uses at the mill. Given the global nature of the climate change issue, there would be no benefit to reporting by individual emission unit (e.g., for each boiler) and it would be administratively burdensome.

It is a common practice to allow the use of default emission factors and energy content for emissions reporting. For example, the Canadian mandatory emission reporting program and the European Union's reporting and cap and trade system both follow this approach. The industry has invested tremendous technical resources into establishing emissions and

operational factors and has a long history of using them for regulatory purposes. There is no evidence to suggest that periodic fuel sampling, conducted by the final fuel consumer, would enhance GHG emission estimates.

At a minimum, California should allow for the use of accepted industry- and vendor-provided emission factors rather than mandating that the final consumer of the fuel undertake these new and unfamiliar (and costly) analyses. However, the preferred approach would be to follow the conventions established by the Canadian and European Union's programs and allow either national average fuel-specific emission factors, published by the IPCC, or site-specific factors determined (through experience) to be more appropriate for the example under evaluation.

Direct measurement should be optional. Most regulated facilities have internal control procedures to determine which method is the most consistent and accurate for its operations given its fuels, fuel systems, and other data analysis and reporting requirements. Adding another layer of monitoring and recordkeeping would be redundant with no added value.

Where a facility is co-firing biomass it should be allowed to estimate the fossil fuel-related emissions using a mass balance approach (emission factors and activity data) as in other fuel combustion calculations. Facilities with regulated continuous emission monitor (CEM) systems can use CEMs as an alternative method if a reasonable means exists to translate CEMs data into GHG estimates. In such instances, however, back-calculating of biogenic carbon dioxide from biomass (versus fossil fuels) using operating and emissions factors remains a necessary calculation rendering the added value of the monitoring to be little or none. The requirement to use the ASTM method D6866-06a, which requires stack sampling and radio carbon dating, is unnecessary, overly burdensome, and potentially less accurate than estimates based on the mass balance approach.

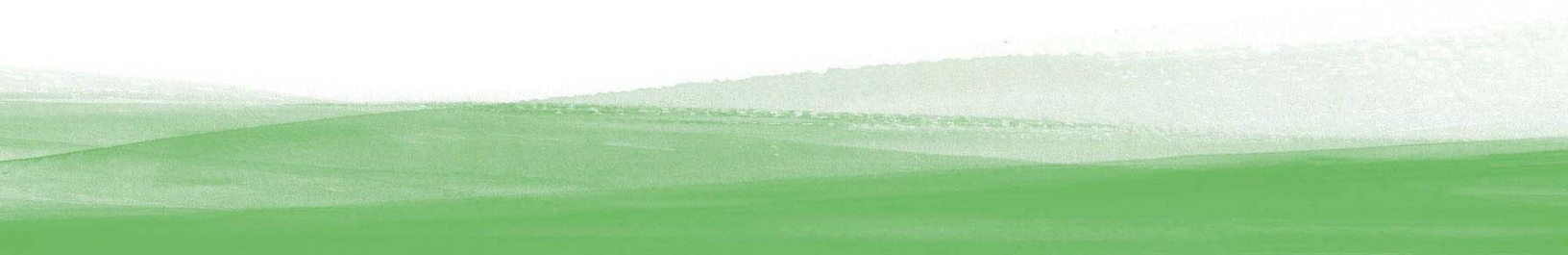
Thank you for this opportunity to provide comments. If you have new questions based on our responses above we would be more than happy to provide additional input. You can contact me via e-mail at anthony.chavez@weyerhaeuser.com or by phone at 253.924.7148.

Thank you for your time and consideration.

Sincerely,



Anthony Chavez
Public Affairs Manager



Web Participant Feedback on Biomass

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General

Thank you very much for the opportunity to provide input early on in the process. Overall, the framing of this issue and the questions ARB will need to answer over the coming months would greatly benefit from additional work. The provided feedback questions skip important steps in setting up the task at hand, and combine questions with very different ramifications (e.g. in question #1, setting up a definition of biomass that is the foundation for reporting is different than having a definition determine whether or not biomass emissions are included under the cap).

From our perspective, there are three main areas for ARB to address:

- A. Definition of renewable biomass
- B. Reporting requirement
- C. Cap requirement

A. Definition of renewable biomass

The definition of renewable biomass helps set the boundaries within which different materials can be used for energy and considered renewable. Largely implicit in such a definition is the setting of parameters for what kind of material is also considered sustainable, will not cause other forms of environmental harm, and whose GHG impact is *at least* no greater than fossil fuels. However, that is a lot for a single definition to accomplish. In addition to defining what feedstocks can be used for biomass energy, ARB should develop further standards for sustainability specific to fuel source, and, applying those sustainability standards, GHG lifecycle analysis for each biomass feedstock.

For the underlying definition of renewable biomass, per feedback question #2, it is entirely appropriate for ARB to review other working definitions. Especially where there are associated sustainability guidelines or GHG lifecycle analysis to draw on, existing work can provide useful assistance to ARB. A useful example is the national RFS guidance that, beyond the definition, sets standards for GHG benefits as compared to fossil fuels. The 2008 federal Farm Bill also contains a good definition for renewable biomass. On the other hand, WCI does not have a comprehensive definition to draw from, and thus is not a very strong source. We look forward to the opportunity to provide

further specific input on the definition of renewable biomass, in particular biomass from forest resources. If it would be helpful at this point, we would be happy to share and discuss a working definition we've been developing that is based on a combined reworking of the federal 2007 Energy Bill and 2008 Farm Bill definitions.

What a definition cannot do alone is answer the questions involved for the following two areas: reporting and the cap. While related, those are separate and subsequent steps in the process.

B. Reporting Requirement

Unlike renewable energy such as wind or solar, burning biomass directly releases GHG emissions. In addition to GHGs, many forms of biomass emissions also involve particulate matter that can cause other environmental and public health problems if not dealt with appropriately. For complete and accurate accounting, it is hard to see how ARB could not require full reporting of biomass emissions, regardless of feedstock. WCI also has kept biomass emissions in reporting requirements.

It would be helpful for ARB to clarify whether or not the reporting of all emissions is actually in question. From the initial workshop, it was a little unclear. We thought the main question still in need of public review was the last area below: the cap.

C. Cap Requirement

After emissions are reported, the area of debate is then how those emissions are treated under the cap. Are they equivalent to fossil fuel emissions and require the same level of allowances? Do they have a lower GHG factor and require fewer allowances to cover them? Can they be considered "carbon neutral" and thus not require allowances at all? In regard to this final question, it should be noted that no form of biomass energy emission is necessarily carbon neutral – the WCI provision leaving this question up to individual jurisdictions does not say that they must find certain sources neutral, only that sources *determined to be* neutral would not require allowances.¹ Further, before any source could be determined carbon neutral, the definition of carbon neutral would need to be developed.²

The first challenge in answering the above questions is unpacking different kinds of biomass emissions. All potential biomass feedstocks are not created equal. As was mentioned at the workshop, for example, there are different considerations for biomass that is truly *waste* and that which is *harvested*. Within harvested biomass, there are

¹ PFT did not support the WCI decision to leave the determination of GHG factors for biomass feedstocks up to each individual jurisdiction. The answer to this question should not vary widely between states or provinces, and the potentially differential treatment of biomass emissions between jurisdictions can lead to inaccurate GHG reduction claims, unfair advantages to jurisdictions that declare energy sources carbon neutral that may not be, and unintended environmental outcomes in the absence of broadly accepted sustainability and GHG lifecycle guidelines.

² For example, if it takes longer than one year for an emissions source to become "neutral" (e.g. through replanting) is that really carbon neutral, or are the emissions being *offset*, introducing the need for similar controls as offsets? We don't have the answers at this point, but are simply flagging that there remain questions on how to define carbon neutrality.

different considerations for biomass grown as a dedicated agricultural crop and biomass derived from more complete ecosystems, such as forestland. For forests, some of the important boundaries that need to be set can already be in the definition, such as by restricting harvested biomass to logging slash and pre-commercial thinning, and other guidelines could be established as state best management practices (for example, that prevent conversion of natural forests to plantations) and sustainability criteria (such as initially included in AB118 implementation).³ But again, such guidance is not the same as a lifecycle GHG assessment.

Essentially, there may not be a single answer for all types of biomass and appropriate treatment under the cap. Given the variety of issues that need to be addressed in a lifecycle GHG analysis for different feedstock categories, breaking down the meeting schedule further to deal with different types of biomass energy could be helpful. Public stakeholders with specific areas of expertise can help comment on needed variables to include in lifecycle analysis (e.g. land use change, regeneration, energy use, etc.), and highlight other considerations such as baseline activity (e.g. what happens if a GHG-creating activity is increased in order to get the material for bioenergy use?).

Until there is a clear process for doing comprehensive analyses, and until that work can be completed, it would make the most climate sense to count all biomass energy emissions under the cap. Assumptions of carbon neutrality will only serve to delay needed emissions reductions as well as valuable development of systems for ensuring low-carbon, sustainable biomass energy. Such assumptions are also unnecessary for creating demand for renewable biomass energy; demand will exist regardless because of the independent requirements for switching to renewable sources (however we recognize that cost issues may need to be addressed in a full auction system). LCA work is already well underway for a variety of biofuels through the LCFS, however we are not currently aware of similar analyses being done for sources allowed under the RPS (we would be happy to be corrected). Ideally, analyses would be completed prior to initiation of the cap & trade program in 2012, and demonstrated GHG benefits of biomass energy could be appropriately recognized in allowance requirements for energy producers. However, it's likely that ongoing adjustments and monitoring would be required throughout the lifetime of the program to ensure analyses are accurate and incorporate new information and changing circumstances.

ARB Feedback Questions

- 1. What principles and criteria should guide California's biomass definition for the purpose of reporting and inclusion/exclusion of fuels under the cap?**
- 2. Should the ARB definition take into account other working definitions?
Consistency across RPS, RFS, LCFS, and WCI**
- 3. What reporting provisions should be considered regarding data collection, measurement, emission factors, etc.?**
- 4. Other Comments**

³ See for example the discussion presented by the Forest Guild in their report *An Assessment of Biomass Harvesting Guidelines*, January 2009.
http://www.forestguild.org/publications/research/2009/biomass_guidelines.pdf



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March 5, 2009

To: Manpreet Mattu
California Air Resource Board

From: The California Biomass Energy Alliance
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Comments on Biomass Reporting in a Cap and Trade Program

CBEA would like to provide the following comments to the ARB on questions provided on the GHG reporting in cap and trade program.

CBEA is a trade association comprised of the State's solid fuel biomass electricity generating facilities. There are 33 such biomass facilities spread throughout 19 counties in California, generating over 600 MWs of renewable power, which is approximately 1½% of the overall power generated in the State, and 17½% of all the renewable power. (See attached map.)

Biomass power plants combust wood and agricultural waste to produce electricity, wastes that would otherwise create adverse environmental impacts with their disposal. Biomass fuels, purchased and consumed in our facilities, are composed of agricultural waste like orchard prunings, trimmings, and tree removals, rice hulls, fruit pits, etc; forest wood waste like small trees and undergrowth cleared from forests for fire suppression and growth enhancement; and, urban wood waste, like construction-wood scraps, broken pallets, clean wood waste from factories and residue from commercial and community tree trimmers. California's biomass plants burn the wood waste fuel in controlled boilers to produce steam, which drives a turbine, which turns a generator, which converts power into electricity.

The biomass power industry is important to the State of California for several reasons. First, biomass power is needed to help California meet its renewable energy mandates (AB 1078 / SB 107). Existing biomass facilities are a large component of the Investor Owned Utilities (IOUs) Renewable Portfolio Standard (RPS) baseline, as they attempt to reach a goal of 20% renewables by 2010, and the 33% by 2020 requirement outlined in the AB 32 Scoping Plan. Because biomass power is baseload power, meaning it runs all the time, not having to wait for the wind to blow or the sun to shine, it is an important component of making the renewables mandates work. This is why there are an additional ~100 MWs of signed biomass contracts under the State's RPS.

Second, California's biomass industry consumes 7½ million tons of wood waste every year, helping local governments throughout the State meet their landfill diversion requirements set by AB 949 (Sher, 1990). The use of this wood in a controlled combustion process also reduces criteria pollutants. By preventing open field burning of 1.5 million tons of agricultural waste each year, biomass plants cut criteria pollutants up to 98%.

Finally, and most importantly, biomass power facilities have a net negative impact on greenhouse-gas (GHG) emissions. Diverting waste from high GWP (methane) disposal methods, like landfills and open burning, actually reduces GHG emissions on a true net basis. This is in addition to the GHG reduction common to all renewables that results from the displacement of utility fossil-fueled generation by the renewable power generation. New biomass facilities will be needed to help California meet its mandated GHG reductions (AB 32). Please see the attached report (Morris, 2008) on the relationship between biomass energy production and greenhouse-gas emissions.

All of these benefits are recognized by the Governor in his Bioenergy Executive Order S-06-06 which, among other things, calls for the state to meet a 20 percent target for biomass with the RPS, consistent with the established state goals for overall renewable generation for 2010 and 2020.

Regardless of where the fuel originates, facility operating permits and market economics dictate what fuels we can take, how far a facility can go to get fuel, and what emissions we are permitted to produce. Energy is the lowest valued use for biomass resources. We only use the materials that have no higher-valued application. The value of biomass fuels is far too low to allow for the use of primary agricultural or forestry resources as boiler fuel. The biomass power industry is, in effect, one of several options available for the disposal of residues from ongoing agricultural and forestry activities. We provide the environmentally superior disposal option for these materials, in addition to producing clean, renewable energy.

1. What principles and criteria should guide California's biomass definition for the purpose of reporting and inclusion/exclusion of fuels under the cap?

The ARB's definition of biomass in its adopted GHG inventory and mandatory reporting program is absolutely appropriate, and does not need fixing. The biomass-to-energy industry does not propose any changes to the existing definition, and would vigorously oppose any changes that make it more restrictive.

The pure essence of the ARB definition of biomass is that it recognizes that the biomass-to-energy industry purchases and consumes biomass **waste**. It does not link the facility to the type of operation that produces the waste, nor should it. The biomass-waste-producing operation occurs with or without the existence of the biomass industry. Whether the waste comes from a transfer station that separates out wood waste from other materials, an orchard removal for new crop establishment, or a forest-fuels management program, the biomass-to-

energy facility is one option for the disposal of the biomass residues. There are some alternate fates for biomass fuels, such as compost or landscaping materials. However, if the biomass is not being used for power production or these other products or processes, it is landfilled, open burned, or left to either burn another day or rot in the forest or field.

We are aware that in other venues efforts have been made, sometimes successfully, to limit the kinds of biomass that can be used for various applications beyond what is permitted by the existing reporting definition that has been adopted by the ARB. As we understand the issues, these attempts to put restrictions in biomass definitions are motivated by a concern that prime agricultural and forestry commodities will be used for energy production. Unlike the ethanol industry, which uses commodity corn as a feedstock, the biomass-electricity industry has never, and will never, use prime agricultural or forestry resources as boiler fuel. Basic economics precludes that possibility. Moreover, no standing trees are ever harvested for the exclusive purpose of being used as boiler fuel. Trees that are removed in thinning operations conducted for land-management purposes, such as fire-hazard reduction or watershed cleanup, can be used as boiler fuel, often helping to offset some of the costs of the thinning operations. If there is no fuel outlet for these materials, they are usually pile-burned and/or broadcast burned in the forest. We believe that the ARB should adhere to the principle that all biomass wastes used as fuels for energy production are, by definition, sustainable.

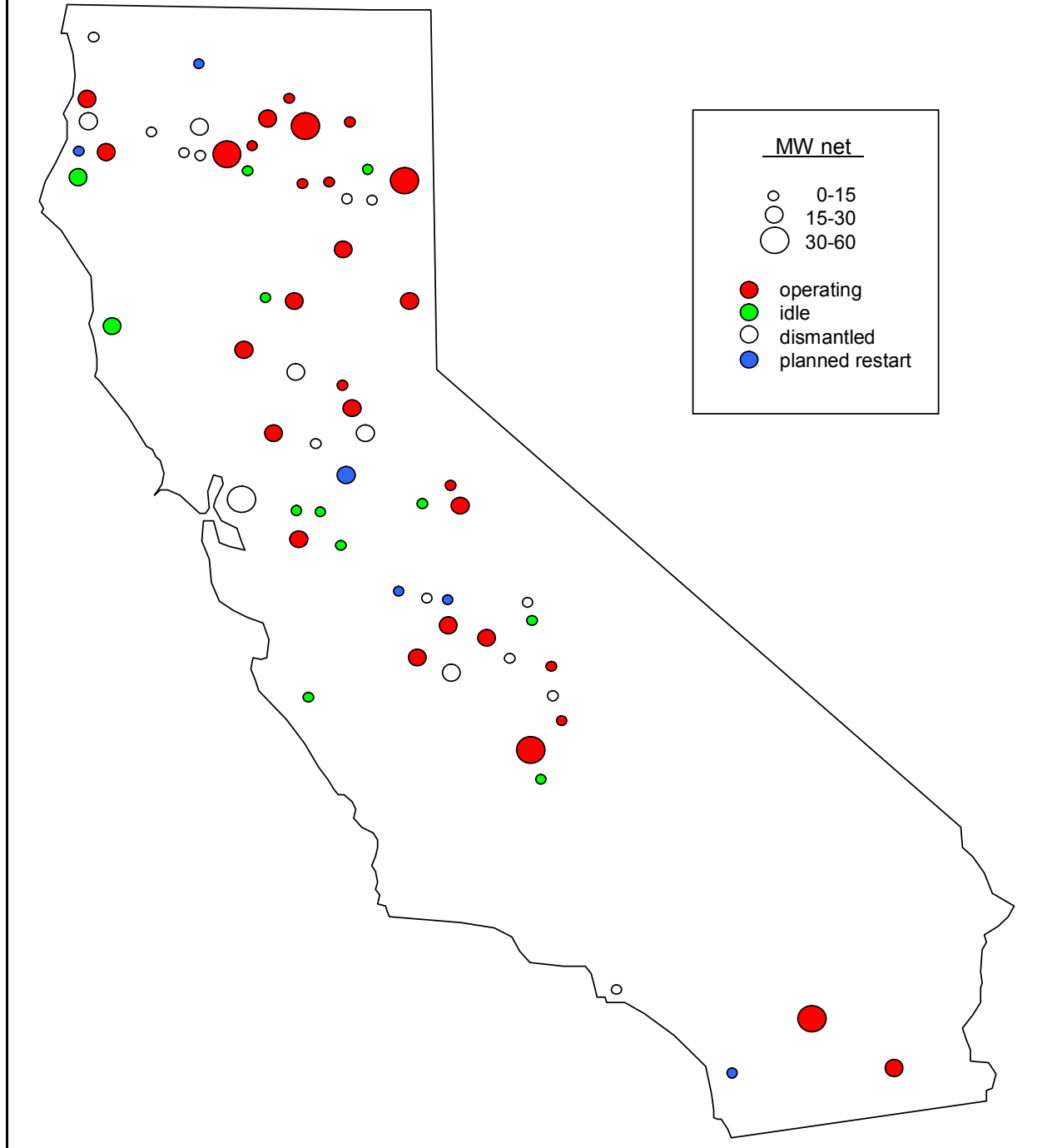
2. Should the ARB definition take into account other working definitions?

Currently, CBEA is actively opposing any definition of biomass that seeks to put any hurdles in the way of getting biomass wastes to our facilities, as discussed above. We are also concerned about the possibility that the ARB might alter its definitions or reporting requirements for biomass by removing the distinction currently in the AB 32 reporting rules between emissions of biogenic and fossil carbon. Biomass power production produces large amounts of biogenic CO₂ emissions, but these emissions do not add new carbon to the atmosphere, as is the case with fossil CO₂ emissions. Biogenic CO₂ emissions should continue to be reported in a separate category from fossil CO₂ emissions, and the biogenic emissions should not be regulated under the cap-and-trade program, except insofar as they are used to establish net biogenic greenhouse-gas-reductions for purposes of creating ghg offsets for the use of biomass fuels.

3. What reporting provisions should be considered regarding data collection, measurement, emissions factors, etc?

CBEA supports the current Board-approved mandatory reporting program which includes four important components. First, biomass-to-energy CO₂ (biogenic CO₂) is reported on a separate line item from CO₂e (fossil CO₂). Second, the mandatory reporting methods approved last year do not require additional equipment to verify emissions. Third, the fossil fuels that are used to warm up the boilers will be captured in another upstream sector. Fourth, specific testing for CH₄ and N₂O is allowed.

California Biomass Power plants 2008



Greenhouse Gas Reporting in a Cap-and-Trade Program
Participant Feedback - Environmental Defense Fund

Participant Feedback on Biomass

Please submit your responses to MMattu@arb.ca.gov by March 5, 2009

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1. What principles and criteria should guide California's biomass definition for the purpose of reporting and inclusion/exclusion of fuels under the cap?

- a. **Principle:** CARB's definition of biomass for the purpose of reporting and inclusion/exclusion under the cap should not be constrained by the definition used within the current mandatory reporting program. CARB has considerable flexibility to address biomass energy and biofuel emissions, both direct and lifecycle.

Current definition within CARB's mandatory reporting program: "Biomass" means non-fossilized and biodegradable organic material originating from plants, animals and micro-organisms, including products, byproducts, residues and waste from agriculture, forestry and related industries as well as the non-fossilized and biodegradable organic fractions of industrial and municipal wastes, including gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material. And; "Biomass-derived fuels" or "biomass fuels" means fuels derived entirely from biomass.

With regard to direct emissions from biomass / biofuel combustion, both AB 32 and the Western Climate Initiative background documents grant California (CARB) the flexibility to define emissions from biomass / biofuel combustion as carbon neutral. If CARB decides a particular biomass based energy or biofuel has a carbon footprint, it may require reductions of the emissions associated with the combustion or use. Therefore, when designing a cap-and-trade program, CARB is not precluded by either the legislature or regional agreements from placing biomass under the economy-wide cap on overall emissions.

Unlike direct emissions, indirect emissions occur at another location other than the site of combustion. Indirect emissions occur within the lifecycle of biomass energy or biofuel, and can occur in sectors either traditionally covered by a cap (i.e. transportation and fossil based energy), or not covered by a cap (i.e. agriculture). Under AB 32, CARB has considerable flexibility to address emissions occurring within the lifecycle of biomass energy and biofuels. Also, under the WCI agreement, California has an obligation to assess whether and how to include upstream emissions from biofuel production, taking into account several factors such as leakage, consistency of treatment, etc.

- b. **Principle:** Establishing a definition should not be the sole objective –Rather, California should strive to characterize the full scope of emissions associated with biomass based energy production - on a full lifecycle basis and looking at both direct and indirect emissions.

Developing accurate lifecycle emissions data for biomass-based fuels and energy is a necessary step to understanding the full emissions profile and is helpful for identifying opportunities for emissions reductions. Further, as efforts to bring more sectors under GHG control evolve, accurate assessment of

Greenhouse Gas Reporting in a Cap-and-Trade Program

Participant Feedback - Environmental Defense Fund

avoided emissions from waste diversion and avoided methane emissions will help business owners and project developers initiate meaningful GHG reduction projects.

- c. Principle: Combustion of biomass releases greenhouse gases - Regardless of whether carbon is on the short or long term carbon cycle, the combustion of biomass emits carbon dioxide. Reducing carbon dioxide emissions, even in the short term, is a valuable contribution to climate stabilization. CARB should ensure its definitions and reporting structure enable interested parties to generate and record emissions reductions from several areas of the fuel lifecycle.
- d. Principle: Accurate, verified data is essential - California should strive towards the most accurate data possible, and away from using broad assumptions and emission factors. Although programs like the LCFS may use emissions factors and look-up tables, they also strive to improve emissions data with accurate, localized, field level reporting. An effective multi-sector cap-and-trade program requires accurate and verified emissions accounting, and enforceable reduction requirements.

2. Should the ARB definition take into account other working definitions? Consistency across RPS, RFS, LCFS, and WCI

CARB's definition of emissions from biomass (and scope of inclusion) within the AB 32 cap-and-trade program development process should take into account working definitions included in regulatory policies both internal and external to California. However, although coordination among these policies is valuable for expanding the traditional scope of emissions reporting into traditionally non-reporting sectors (i.e. agriculture), exact parity with definitions is not necessary.

With regard to defining types of biomass that are considered under the cap, CARB's definition should seek to go beyond the other working definitions referenced. Within the definition developed for reporting under the cap, CARB should allow biomass that is both utilized in a sustainable fashion and accurately characterized for carbon emissions. Currently, CARB and other agencies in California are working to establish biomass guidelines pertinent to this definition. That process should be taken into account and potentially utilized for guidance on setting biomass definitions for a cap-and-trade program.

Discussion of individual definitions:

a. LCFS

This regulatory program is based on the emissions occurring within the lifecycle of various fuels. Direct emissions from crop-based biofuel combustion are characterized as part of the short-term carbon cycle and are assigned a value of zero gCO₂/MJ using the GREET model. Direct emissions from the combustion of cellulosic biofuels have not yet been given a GREET value, but they will also likely receive a value of zero. For emissions within the lifecycle of the fuels that are associated with the production and transportation however, fossil fuel and land use change emissions are counted and assigned GHG value.

Included in the LCFS regulation is the option (Method 2) for fuel producers to report data on local characteristics such as fertilizer use, irrigation methods, and other parameters. By reporting these fuel specific characteristics, producers can certify their fuel to a lower emissions profile and search for ways to reduce the lifecycle emissions of their fuel.

For the purposes of reporting, CARB's definition of biomass should take into account the lifecycle aspects of the LCFS, including the parameters reported under the Method 2 option. Further, CARB should require fuel producers to report the volumes of fuel sold, regardless of whether the direct emissions from that fuel are assigned a zero carbon value.

Greenhouse Gas Reporting in a Cap-and-Trade Program

Participant Feedback - Environmental Defense Fund

In addition to the direct and indirect emissions, the LCFS incorporates emissions from land use change that is driven by the bioenergy production. CARB should not necessarily adopt the indirect land use change values ascribed to various biofuels within the LCFS without first undertaking a careful accounting of how market mediated land-use change occurs as a result of bioenergy production.

b. RFS

The federal renewable fuel standard, like the LCFS, looks at the lifecycle emissions of particular biofuel production. Since the methodology for determining lifecycle emissions under the standard has not been released, it is uncertain what aspects of fuel production will be utilized to determine lifecycle emissions values. However, to the extent that local data on emissions from field level practices is developed, CARB should require similar reporting.

c. RPS

The California renewable portfolio standard, like other state RPS, uses a definition to determine what can or can not be used to achieve the percentage requirements of the standard. If CARB seeks to exclude direct emissions of biomass combustion from emission reductions obligations, this definition can be used to determine what types of direct emissions are excluded from the program. However, this definition should not have a bearing on what emissions are required to be reported or on the lifecycle emissions of a particular fuel pathway.

c. WCI

As discussed above, the WCI leaves it to California to determine carbon neutrality of the biomass within its borders. The WCI also leaves room for California to determine the treatment of lifecycle emissions within the biomass energy and biofuel pathway. CARB should require reporting of lifecycle emissions and set a positive example for other WCI jurisdictions to follow. As a leader in the WCI process, California will influence other jurisdictions and can positively impact the system of reporting of emissions throughout the west.

3. What reporting provisions should be considered regarding data collection, measurement, emission factors, etc.?

As discussed above, CARB should strive to develop an accurate and robust data set for biomass emissions, including lifecycle emissions associated with the production and transportation of the biomass energy production. Although emissions factors and emissions modeling may be necessary for some aspects of the biomass pathway, CARB should strive to develop data that uses actual measurement and field level data. Although some of this data may not be incorporated into cap-and-trade programs, development of lifecycle emissions information for bioenergy production will allow fuel producers to seek emissions reduction opportunities.

March 17, 2009

Manpreet Mattu, ARB Office of Climate Change
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

Re: Biomass Energy Production in AB 32 Cap-and-Trade Program

The Nature Conservancy commends the California Air Resources Board (ARB) for adoption of the Climate Change Final Scoping Plan pursuant to the Global Warming Solutions Act of 2006. The Nature Conservancy is a leading conservation organization working locally and around the world to protect ecologically important lands and waters for nature and people. Global warming is one of the most pressing issues of our time and threatens the natural systems upon which all life depends. It is therefore critical for California to maintain its leadership and momentum to mitigate global warming and implement measures to help our natural systems and society adapt to the unavoidable effects of global warming. We appreciate the opportunity to provide input on the next phase of the AB 32 implementation process.

It is essential for the Scoping Plan to identify and facilitate policies that lead to real and permanent greenhouse gas (GHG) emission reductions to comply with the requirements of AB 32. To this effect, T recommends that any biomass energy production under the cap-and-trade portion of the program include adequate upstream GHG accounting. The following outlines our recommendations on biomass energy production to ensure such reductions.

Biomass material from the forest sector may provide a net climate benefit by serving as a renewable energy source. There may be a role for this energy source in climate policy and under a cap-and-trade program. However, careful consideration must be given to comprehensive accounting and environmental impacts. Biomass energy produces emissions just as other energy sources do and like them, should be subject to the cap. And, biomass energy is not automatically carbon neutral. Subsequent regrowth of trees and vegetation may ultimately offset biomass energy emissions, but proper accounting must be in place to track whether or not this offset of emissions actually occurs. The accounting for biomass energy should include upstream emissions to account for emissions that may be caused upstream to produce the material used for energy (e.g., the forestland base).

Proper environmental safeguards must be in place to ensure that the production of biomass fuels does not lead to environmental harm, such as the conversion of forestland to other fuel sources, the net depletion of carbon stocks in forests to produce biomass material for energy, or the conversion of non-forest native systems to tree plantations to produce material for biomass energy. Forests must be managed sustainably to produce any material for biomass energy, which includes sustaining the existing climate functions and benefits of the forests, as well as habitat function, water quality, and biodiversity.

On a more technical level, the renewable energy analysis and definitions need to reflect and define the different fuel sources since they are not all created equal. Experience with other sources of biofuels such as corn and palm oil highlight the need to track both climate and environmental impacts upstream on the land base to ensure that the production of fuels downstream do not result in environmental harm or increase land-based GHG emissions through the depletion of carbon stocks or land conversion.

Production of cellulosic material for energy could result in a net increase of emissions from the forest if harvests are accelerated to produce material for energy, as existing live forest carbon pools (live trees) are depleted over time for biomass material production. To ensure that these negative environmental impacts do not happen, any program including biomass energy must include the accounting and monitoring requirement to demonstrate that existing forests and their carbon pools are at least managed in a "steady carbon state" over time. Therefore, the greenhouse gas accounting related to

forest biomass energy should quantify not only the emissions associated with the combustion of biomass material, but also the upstream changes in forest carbon. Greenhouse gas emissions associated with the transportation of these materials should also be considered. Without this comprehensive accounting, there is a risk that net increases in GHG emissions may occur upstream in the forest over time in order to produce material for energy further downstream. Any policies developed by CARB and other agencies to facilitate biomass energy from forests should include these GHG accounting requirements and environmental safeguards that protect against harm to ecosystems, wildlife and habitat and ensure real climate benefits as required by AB 32.

TNC appreciates the opportunity to provide input on this critically important effort and acknowledges the significant amount of work that the ARB has invested in the Scoping Plan. We look forward to continued work with the ARB and other stakeholders to provide support for California's leadership and solutions to address global warming.

Contacts:

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Participant Feedback on Biomass

Please submit your responses to MMattu@arb.ca.gov

Name: Lou Wilkinson

Organization: Sunshine Gas Producers

Sector: Landfill Gas Fueled Power Generation

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1. What principles and Criteria should guide California's biomass definition for the purposes of reporting and inclusion/exclusion of fuels under the cap?

California RPS rules include a definition of renewable fuels that includes, among others, landfill gas. Decision 07-01-039 dated January 25, 2007 before the Public Utilities Commission of the state of California titled "Interim Opinion of the Phase 1 Issues: Greenhouse Gas Emissions Performance Standard" recognizes that generation of power from landfill gas, among other fuels, results in a substantial reduction of GHG emissions. This conclusion is explained in Section 1.6 of the referenced decision. It is imperative that any Cap-and-Trade rules recognize landfill gas fueled power generation as carbon neutral and exempt from any requirements regarding GHG emissions mitigation. Any economic penalties levied on landfill gas fueled power generation facilities would not only cause negative GHG emissions to increase, but would negate the economic benefits anticipated in the recently revised RPS legislation.

2. Should the ARB definition take into account the other working definitions? Consistency across RPS, RFS, LCFS and WCI.

Definitions should be consistent with other definitions to ensure the objectives discussed above are met.

3. What reporting provisions should be considered regarding data collections, measurement, emission factors, etc.?

Reporting requirements should be reasonable, but not overly burdensome to the generator. Reporting should be limited to that data necessary to confirm the project meets the standards described above.

Solid Waste Industry for Climate Solutions

*County Sanitation Districts of Los Angeles County
Rural Counties' Environmental Services JPA
Kern County Waste Management Department
OC Waste & Recycling
Norcal Waste Systems
Republic Services
Waste Connections
Waste Management*

March 10, 2009

Lucille Van Ommering
California Air Resources Board
Stationary Source Division
1001 I Street
P.O. Box 2815
Sacramento, CA 95812

Via Email: lvanomme@arb.ca.gov

Subject: Comments Regarding Inclusion of the Waste Industry in a Cap-and-Trade Program, and the Definition of Biomass

Dear Ms. Van Ommering:

We would like to offer our thanks for this opportunity to provide additional comments on the issues raised during the February 18, 2009 Cap-and-Trade Program Design Technical Stakeholder Working Group Meeting. We look forward meeting with you later in March to further discuss the issues raised in our comments and in the correspondence.

The undersigned are representatives of an informal organization of solid waste management and recycling organizations known as the Solid Waste Industry for Climate Solutions (SWICS). The entities represented by this organization provide comprehensive waste management, biomass energy and recycling services throughout California. The purpose of this organization is to provide Climate Change policy makers with the most accurate information about our industry and our potential contributions to climate change solutions.

CARB is proceeding with development of a "cap and trade" program under AB 32, and held a workshop on February 18, 2009 to discuss program design – *Greenhouse Gas Reporting in a Cap-and-Trade Program*. The stated purpose of the meeting was:

Identify issues related to greenhouse gas emissions reporting for the cap-and-trade regulatory development process

The meeting purpose was further expanded, as detailed in a slide bullet point:

Reporting biomass emissions – beginning the conversation

Finally, later in the meeting, the audience was asked to provide, in writing, feedback on the definition of “biomass”.

While we agree with the need to define and clarify the treatment of biomass in CARB’s GHG initiatives, SWICS is concerned about the process outlined at the February 18, 2009 meeting. We have been asking for clarification for some time now on the status of a decision regarding whether the solid waste management sector was in or out of a cap-and-trade program. Representatives of the wastewater management sector have asked a similar question. Responses to these inquiries from CARB staff and from staff at the Western Climate Initiative have been inconsistent and confusing. Despite this lack of clarity CARB proceeded with the February 18 meeting with the purpose, as outlined above, that the biomass reporting issues (and thus the biomass facilities?) are being treated within the Universe of a cap-and-trade program. Further confusion comes from the slide bullet point cited above that states we are “beginning the conversation” of “reporting biomass emissions” in a cap-and-trade program. Why is this conversation happening before we know how the sectors are to be treated?

SWICS certainly believes it is important to agree on definitions, such as “biomass” and “biogenic”, but these definitions should be determined within the context of the program design and after determining whether our sector is in a cap-and-trade program. We appreciate the tremendous burden CARB staff is under to formalize complex programs under a very tight schedules, however, the very important questions posed here are crucial to the economic viability of our industry and to our ability to support real GHG reductions at our facilities.

The purpose of this letter is to provide an overview of SWICS position regarding the inclusion of the waste management sector in a cap-and-trade program, and to be responsive to CARB’s request to provide feedback on the definition of biomass. A discussion of the biomass definition is attached as an appendix to the main letter.

Overview

SWICS believes that the waste management sector should be fully excluded from a cap-and-trade program. We agree with the findings of the House Committee on Energy and Commerce report, *Climate Change Legislation Design White Paper* dated October 2007 ([http://energycommerce.house.gov/Climate Change/index.shtml](http://energycommerce.house.gov/Climate%20Change/index.shtml)). The document concludes that landfills, and other sources in the waste sector, generally do not lend themselves to regulation under cap and trade programs based on the difficulty in measuring the direct emissions accurately. In support of this conclusion, we offer the following factors for your consideration:

1. Carbon contained in waste is managed in an integrated system of recycling, re-use, composting, combustion, landfilling and in many cases renewable energy and fuel production.

2. Waste is a “must manage” product of society making the waste industry an essential public service. Wastes are not generated by the solid waste industry or the wastewater treatment industry. Rather, we are responsible for safely and protectively managing wastes that generated by some other residential, commercial or industrial activity.
3. The flow of waste to individual management options is a function of economics and policy (e.g., legislatively driven diversion rates and local government diversion requirements). The pattern of flow (e.g., amount of recycling or landfilling) is generally beyond the control of individual owner operators, and any change to this system, comes slowly due to facility permit restrictions and a lengthy permit revision process.
4. Overall waste generation can increase or decrease over time due to factors such as population, economics and consumer habits. These changes are often not predictable such as with the current economic crisis that has significantly reduced waste generation.
5. Carbon within this system, both biogenic and anthropogenic, follows a complex life cycle of energy usage and savings, and emissions and sinks. Precise calculations to define the parameters of the complex lifecycles are very site and region specific, lack any precision and subject to significant debate. In fact a comprehensive organics (including biomass) life cycle analysis is being conducted by the Integrated Waste Management Board but will not be completed for at least 12 months.
6. Waste management provides a valuable alternative energy source in the form of biogas and waste-derived biomass. Compared to fossil-derived fuels, this energy source has a low carbon intensity and fits within the realm of a low carbon fuel standard.
7. The combustion of biogas and waste biomass result in biogenic CO₂, part of the natural short-term carbon cycle.
8. Within the waste management system, a significant amount of carbon is locked up in long-term storage (e.g., carbon sequestration in landfills or in soils from compost).
9. The waste management system, in addition to biogenic CO₂ emissions, also results in some direct anthropogenic emissions, however:
 - a. Methane emissions, such as fugitive methane from landfills, are controlled through stringent existing regulations and additional regulation proposed under the AB32 Scoping Plan, which in the opinion of the landfill industry stretches the limit of landfill gas collection.
 - b. Use of supplemental fossil fuels, typically natural gas, is unavoidable because of the variable nature of biogases and waste biomass. Examples of supplemental natural gas usage includes: 1) natural gas to provide flame stabilization when methane levels of landfill gas are reduced because of the age of a landfill or excess air intrusion due to high system vacuum – flame stabilization allow proper destruction of trace toxics; 2) small additions of natural gas in some instances allow for the use of energy recovery devices rather than simple flaring with no energy recovery; and 3), natural gas stabilizes and minimizes emissions from waste incineration when difficult to burn loads are received, such as wet waste. In many instances the use of supplemental natural gas is required by local permit to ensure minimal criteria pollutant or trace toxic emissions, but in all instances, local regulations or other contracts limit the use of these fuels. The supplemental use of these fuels within these applications is variable and not predictable.
 - c. Combustion of waste biomass, such as municipal solid waste, results in largely biogenic CO₂, but can result in some anthropogenic CO₂ due to fossil fuel-derived waste, such as plastics. The amount of anthropogenic carbon released is difficult

to measure with any accuracy and would vary over time depending upon the composition of the waste stream. The composition of the waste stream is generally not under the control of the facility owner/operator. Despite these emissions, waste-derived biomass is an alternative energy source that displaces fossil fuel-derived energy.

10. The landfill industry has already reduced GHG emissions by approximately 11% since 1990 and is poised to do even more under the early action methane control measure regulations under development.
11. Overall the solid waste industry has accomplished tremendous reductions of GHG emissions from the activities for which we are responsible. As documented in the attached peer reviewed paper on the Journal of the Air and Waste Management Association. As documented in that paper, since 1974, greenhouse gas emissions from our sector have been reduced by 75% while total generation of solid waste for which we provide services has more than doubled. No other major industry group in California or North America can make a similar claim for the goods or services they provide.

Putting it all together:

One of the basic elements of a cap-and-trade system is the ability to provide accurate measurement of emissions to assure accountability and integrity of allowances. As shown above, a characteristic of the waste industry is the difficulty in providing precise estimates of GHG emissions or sinks. Couple this with the lack of control over waste streams by individual owner/operators, and you have situation where the integrity of allowances in the waste industry would be questionable.

In addition, the waste industry is subject to substantial direct state and local regulations that already work to minimize and reduce GHG emissions, and in many instances facilities are required in its operations to use supplemental fossil fuels. As described above, since the flow of waste to any individual facility is beyond the control of an individual owner/operator, “fuel” shifting to control GHG emissions (assuming this can be accurately determined) is not possible. In fact, waste-derived biomass produces a renewable fuel with low carbon intensity. As a result of these inherent constraints, if included in a cap-and-trade program, an individual facility owner/operator would have no opportunity to further reduce GHG emissions and would have no choice except to continually purchase allowances in the marketplace.

Waste management is an essential public service. If included in a cap-and-trade program, and the solid waste industry’s only choice is to purchase allowances on the open market, these services would be subject to credit variations and availability, and instability in the allowances marketplace. Including the solid waste sector in a cap-and-trade program places essential public services at a fundamental competitive disadvantage in the marketplace because of the industry's ties to public funding and municipal contracts will not allow the quick actions needed in a competitive credit market. All these factors would severely limit the waste industries ability to provide an essential public service.

In summary, the waste management sector should not be included in a cap-and-trade program, and has been, and will continue to be a better fit for “command and control” regulations. Inclusion in a cap-and-trade program can lead to disruptions in the waste management system, an

Lucille Van Ommering
March 10, 2009

important essential public service. Innovations in this industry that can lead to further GHG reductions, beyond regulation, will occur only if funds are available, through an offset program for instance, to provide for the necessary research and development.

Thank you for the opportunity to provide these comments for your consideration. Please contact any one of the undersigned if you have questions.

Sincerely,

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Attachment: Weitz, et al; "The Impact of Municipal Solid Waste Management on Greenhouse Gas Emissions in the United States", Journal of the Air & Waste Management Association, Volume 52, September 2002

Biomass Definition

There are at least 3 major GHG issues associated with the management of biomass:

- GHG emissions from the combustion of biomass used as a source of energy or fuel.
- Storage of sequestered carbon in harvested biomass.
- How GHG reduction offsets may be generated by alternative energy sources using biomass fuels (and other non-biomass sources of renewable energy) to displace the use of fossil fuels.

The workshop on February 18, 2009 really only addressed the first of the above 3 bullets. SWICS believes that all three will need to be addressed.

GHG Emissions from Combustion of Biomass for Energy

As our representatives discussed on February 18th, there seems to be 2 basic categories of Biomass Energy:

- Waste derived biomass
- Harvested biomass

With respect to waste biomass, the solid waste industry believes that the combustion of waste biomass should be viewed as carbon neutral. That is, CO₂ emissions from the combustion of waste biomass should not be viewed as contributing in any way to climate change. These CO₂ emissions from waste biomass are part of the near term carbon cycle and when diverted from traditional waste management methods are a source of biomass combustion for energy that do not generate anthropogenic CO₂ emissions. Rather, emissions from these sources should be viewed as an extension of the near term carbon cycle and not subject to inclusion in caps. Further, waste biomass to energy should be eligible to generate offset credits due to the displacement of fossil fuel energy production. Sources of carbon neutral waste biomass include landfill and sewage digester gas, biomass to energy facilities, that portion of waste-to-energy combustion that processes biomass, anaerobic digestion, and the thermo-chemical conversion of waste biomass to fuel or energy.

We strongly urge you to familiarize yourselves with the IPCC protocols on waste combustion (http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/5_Volume5/V5_5_Ch5_IOB.pdf). In particular, please note the following excerpts from this document:

Consistent with the *1996 Guidelines* (IPCC, 1997), only CO₂ emissions resulting from oxidation, during incineration and open burning of carbon in waste of fossil origin (e.g., plastics, certain textiles, rubber, liquid solvents, and waste oil) are considered net emissions and should be included in the national CO₂ emissions estimate. ***The CO₂ emissions from combustion of biomass materials (e.g., paper, food, and wood waste) contained in the waste are biogenic emissions and should not be included in national total emission estimates.*** However, if incineration of waste is used for energy purposes, both fossil and biogenic CO₂ emissions should be estimated. ***Only fossil CO₂ should be included in national emissions under Energy Sector while biogenic CO₂ should be reported as an information item also in the Energy Sector.***

This language clearly indicates that the intent is only to recognize the components of fossil origin in GHG emission inventories. The biomass fraction of waste should be view as "biogenic" and part of the near-term carbon cycle. Our sector does not mind reporting biomass emissions from combustion -- but they should not be included in inventories or regulated under cap and trade. Also note the following:

The common method for estimating CO₂ emissions from incineration and open burning of waste is based on an estimate of the fossil carbon content in the waste combusted, multiplied by the oxidation factor, and converting the product (amount of fossil carbon oxidized) to CO₂. The activity data are the waste inputs into the incinerator or the amount of waste open-burned, and the emission factors are based on the oxidized

carbon content of the waste that is of *fossil origin*. Relevant data include the amount and composition of the waste, the dry matter content, the total carbon content, the fossil carbon fraction and the oxidation factor.

As an example of the apparent misunderstanding of waste biomass I suggest you look at the recent report posted on the CARB's LCFS web site regarding, "**Landfill Gas to CNG**" (http://www.arb.ca.gov/fuels/lcfs/100808lcfs_lfg.pdf). Although the source is totally waste biomass fuel (landfill gas) the report still counts the CO₂ emissions from the displaced flaring of the landfill gas as well as the CO₂ emissions from the combustion of the produced CNG that is used as a fuel. Although the overall carbon intensity is very low, it still mischaracterizes the fact that the waste biomass source of the fuel should be considered "carbon neutral" and the CO₂ emissions derived from the combustion of landfill gas and CNG derived from landfill gas should not be counted at all. Only the portion of fossil energy used to produce the LFG to CNG fuel (if any) should be included in determining the overall carbon intensity of CNG produced from LFG.

With respect to **harvested biomass** should be differentiated from **waste biomass** -- although we acknowledge that, in some cases, the distinction may be difficult to clearly define. Biomass that is derived from a totally waste derived source, such as landfill gas or waste digester gas, should be treated as carbon neutral and simply an extension of the near-term carbon cycle. Harvested biomass, such as mid-western corn ethanol -- which has been shown by the CARB LCFS staff to have very high overall carbon intensity, should be treated differently. The carbon intensity of some harvested biomass fuels, such as Midwestern corn ethanol, is very high due to the reliance on fossil fuels for crop production, transportation and refining of the fuel -- even though the fuel itself is biomass derived. Crops that are harvested specifically to produce a fuel should be evaluated to determine their overall carbon intensity. However fuels that are totally derived from materials that would otherwise be "wasted" should be viewed as carbon neutral. Examples of waste derived biomass fuels include: landfill gas, sewage digester gas, and food and green waste digester or gasifier gas. Forest and agricultural debris that would otherwise be wasted should be recognized as carbon neutral waste materials including: forest product mill wastes and residues, dead trees, and agricultural wastes that would otherwise decompose to produce CO₂ or CH₄. **CO₂ emissions from totally waste derived biomass should be viewed by CARB as carbon neutral and simply an extension of the natural near-term carbon cycle.**

GHG Reductions from the Storage of Biomass Sequestered Carbon

The CARB should also consider the impact that stored sequestered carbon has on GHG emissions and global warming. There are several activities that involve the continued storage and preservation of sequestered carbon in biomass materials. These activities include 1) the continue maintenance of in-use forest products (e.g., tables, chairs, books, wood frame houses, etc.), 2) soil carbon storage that can be enhanced by compost and mulch, and 3) landfill carbon storage. In the case of landfills, as much as 50% of the biomass materials that goes into the landfill never decomposes into a greenhouse gas such as CO₂ or CH₄. These materials are permanently stored in the anaerobic conditions of a landfill and the sequestration of carbon is permanently maintained -- thereby removing this portion of the biomass as a source of CO₂ emissions. Some recognition must be afforded those activities that continue to store significant quantities of sequestered carbon -- and thus preventing and lowering GHG emissions from these biomass sources that would otherwise occur.

For example, the solid waste industry recognizes that it is unlikely that any marketable "credits" will ever be generated for the storage of sequestered carbon in landfills. However, the solid waste industry suggests that an overall carbon balance be performed to evaluate the net GHG performance of landfill operations. In this fashion, landfills would be responsible for their net emissions of methane (GWP = 21-25), and at the same time recognized for the amount of sequestered carbon storage that is maintained and preserved in the landfill (in CO₂e with a GWP = 1) that can be used to partially offset methane emissions. CARB should consider this issue further.

GHG Reductions from Biomass Derived Energy that Reduces or Offsets Fossil Fuel Energy

CARB should also consider ways that biomass and other renewable energy sources can be further encouraged by recognizing how biomass and renewables offset the need for a like amount of fossil fuel energy generating capacity. As far as we are aware, the only imperfect tool to recognize the value of renewable energy is through the RPS program in California -- which imperfectly values the GHG benefits of biomass and other renewable energy sources. The CARB should evaluate ways that biomass and other renewable energy sources can be further encouraged and incentivized by mechanisms that recognize their full fossil fuel offsetting capability.

Summary

In summary, we recommend that CARB consider the following courses of action with respect to the GHG implications of biomass management in California:

- GHG emissions from the combustion of biomass or biomass derived fuels for energy
 - CO2 from the combustion of waste biomass or waste biomass derived fuels should be considered carbon neutral
 - CO2 from the combustion of harvested biomass should be evaluated for its overall carbon intensity as a fuel (e.g., similar to LCFS).
- GHG Reductions from the Storage of Biomass Sequestered Carbon
 - CARB should evaluate ways that biomass sequestered carbon can be reasonably and responsibly recognized as a GHG reduction strategy
- GHG Reductions from Biomass Derived Energy that Reduces of Offsets Fossil Fuel Energy
 - CARB should evaluate ways that biomass and other renewable derived energy can be directly recognized and credited for reducing dependence on fossil fuel energy

CALIFORNIA WASTEWATER CLIMATE CHANGE GROUP

1737 North First Street, Suite 300, San Jose, California 95112

Core Steering Committee

Randy Schmidt, P.E.
*Central Contra Costa Sanitary
District*

Daniel McGivney
*Eastern Municipal Water
District*

Vicki Fry
*Sacramento Regional County
Sanitation District*

March 11, 2009

Ms. Lucille Van Ommering
Cap and Trade Program Manager
California Air Resources Board
1001 "I" Street
P.O. Box 2815
Sacramento, CA 95812

Dear Ms. Van Ommering:

Wastewater Industry Participation in a "Cap and Trade" Program

Steering Committee

*Central Contra Costa
Sanitation District*

City of Fresno

*City of Los Angeles Bureau of
Sanitation*

*City of San Diego –
Metropolitan Wastewater
Department*

*East Bay Municipal Utilities
District*

*Eastern Municipal Water
District*

*Inland Empire Utilities
Agency*

*Los Angeles County
Sanitation Districts*

*Orange County Sanitation
District*

*Sacramento Regional County
Sanitation District*

*San Francisco Public Utilities
Commission*

*San Jose/Santa Clara Water
Pollution Control Plant*

The California Wastewater Climate Change Group (CWCCG) is a statewide coalition of wastewater treatment agencies. CWCCG member agencies treat approximately 90% of the municipal wastewater in the state of California. The primary purpose of CWCCG is to respond to climate change and forthcoming regulations and to provide a unified voice for the California wastewater industry. Our members are very proactive in climate change issues. In 2008 we worked directly with the California Climate Action Registry (CCAR) and the California Air Resources Board (ARB) to develop the wastewater treatment methodology in Chapter 10 of the Local Government Operation Protocol for the quantification and reporting of greenhouse gas (GHG) inventories. We are also working with Columbia University, the Water Environment Research Foundation and other international entities to further develop the accuracy of estimating GHG emissions from wastewater treatment processes.

Background

CARB is proceeding with development of a "cap and trade" program under AB 32, and held a workshop on February 18, 2009, to discuss program design – *Greenhouse Gas Reporting in a Cap-and-Trade Program*. The purpose of that meeting was to identify issues related to greenhouse gas emissions reporting for the cap-and-trade regulatory development process. The meeting purpose was further expanded to include the reporting of "biomass" emissions. Finally, later in the meeting, the audience was asked to provide, in writing, feedback on the definition of "biomass". The wastewater industry will provide input on the definition of biomass in a separate submittal.

The wastewater industry, represented by the CWCCG, has requested clarification on whether they would be capped under the AB32 Scoping Plan Cap-and-Trade program. Both CARB and the Western Climate Initiative responses have been inconsistent. It is important to define terms such as “biomass: and “biogenic emissions”, however, these definitions only support the larger question of whether our sector is in a cap-and-trade program. We appreciate the burden CARB staff is under to formalize complex programs under very tight schedules, however, the important issues posed here are crucial to our industry and ultimately to the proper functioning of the Cap and Trade Program.

Characterization of the Wastewater Industry

1. Wastewater is a “must manage” product of society that, for public health and safety reasons, has long been considered an essential public service.
2. The management of wastewater involves processes for collecting and moving wastewater, treatment of wastewater, and management of the byproducts of wastewater treatment, e.g., biosolids. These processes vary greatly among facilities as a result of different discharge requirements, points of discharge (ocean discharges versus natural water streams), reuse demands and unique requirements specific to any given regional water basin.
3. Overall wastewater generation can increase or decrease over time due to many factors including changes in population, economics, consumer habits, regulatory mandates, etc. These changes are often not predictable. An example of this is the current downturn in the economy that has resulted in a significant decrease in wastewater generation at many wastewater facilities that has a direct impact on greenhouse gas (GHG) emissions¹. Also, the “strength” of wastewater components, such as ammonia, will vary diurnally throughout the day and seasonally throughout the year, which will affect the mass of GHG emissions.
4. Wastewater management can provide a valuable alternative energy source in the form of biogas and a waste-derived biomass (biosolids). Compared to fossil-derived fuels, these energy sources have low carbon intensities and fit well within the realm of the Low Carbon Fuel Standard (LCFS) alternative fuels crediting mechanism.
5. The combustion of biogas and waste-derived biomass results in the emissions of biogenic CO₂ which is part of the natural short-term carbon cycle that should not be a regulated or capped commodity.
6. Composting of biosolids can result in carbon storage, offsetting the use of commercial fertilizers, a significant source of N₂O emissions.

¹ Primarily reducing pumping energy and N₂O generation from ammonia removal.

7. While wastewater management generates biogenic CO₂ emissions, it also can result in some direct anthropogenic emissions:
- a. N₂O emissions in wastewater treatment, although considered anthropogenic, comes in large part from wastewater substrates, such as biologically derived nitrogen, interacting with naturally occurring biota and biota that is the result of specially controlled processes.
 - b. The level of wastewater treatment is largely dictated by federal, state and regional water regulations. A process, such as nitrification/denitrification (NDN), has the potential to result in greater amounts of N₂O than conventional treatment. In order to meet state regulations to reduce ammonia discharge to receiving waters, the use of this process, when necessary, is beyond the control of the facility owner/operator. [The California Wastewater Industry strongly encourages coordination on this issue within Cal-EPA especially between the Air Resources Board and the State Water Resources Control Board.]
 - c. Determination of N₂O emissions from wastewater treatment is difficult to be done directly or routinely, but must rely on default emission factors that presently are inaccurate and which can result in estimates that vary by orders of magnitude.
 - d. Use of *fossil* fuels, typically natural gas, is unavoidable for operators who reliably provide essential public services and to optimize utilization of *biogases* for energy recovery. Examples of natural gas usage include: 1) operation of engine-driven pumps in remote areas where electrical service is not adequate; 2) operation of boilers when sufficient biogas is not available, to provide heat for the digestion process; and 3) supplementing biogas in energy recovery equipment so that no biogas is wastefully flared. The supplemental use of these fossil fuels within these applications is variable and not predictable.

Cap and Trade Issues

The CWCCG believes that the wastewater management sector should not be capped under a cap and trade program but instead should be regulated under a traditional command and control approach.

One of the basic elements of a cap-and-trade system is the ability to provide accurate measurement of emissions to assure accountability and integrity of allowances. As discussed above, it is difficult to provide accurate estimates of GHG emissions or sinks for the wastewater industry. The continuously changing wastewater flows and changing diurnal and seasonal “strength” of wastewater equates to variable emissions that would be difficult to predictably offset.

The wastewater industry operates under the regulatory scrutiny of federal, state, and regional authorities that ultimately establish the level of wastewater treatment provided and, directly or indirectly, the level of GHG emissions.

Wastewater management is an essential public health-protecting service. If constrained as a capped sector under a cap-and-trade program, the industry's only choice would be to eventually purchase allowances/credits on the open market. This would result in making these vital health-protective services slave to the credit variations and vulnerabilities of the marketplace. In addition, essential public services are at a fundamental competitive disadvantage in the marketplace as they cannot move as fast as a private industry because spending public funds involves such things as competitive bidding processes that justifiably and necessarily requires more approval steps. Budget processes and budget cycles of essential public services, especially where user fees are involved, cannot accommodate volatile price swings and price changes in the credit market. As you recall, an example of just how volatile the swings could be occurred in SCAQMD's RECLAIM program in the 2000-2001 timeframe. There, prices jumped from cents per pound for a RECLAIM trading credit to over \$60 per pound in a very short period of time, a two-order magnitude of change. Luckily, SCAQMD, with CARB concurrence, had the foresight to exclude essential public services from the RECLAIM market for these very reasons.

In summary, the wastewater management sector should not be included as a capped sector under a cap-and-trade program, but instead be allowed to participate as an uncapped sector, as a source of offsets (above and beyond command and control obligations, of course). This should be a design element of the cap and trade program. Along with offset opportunities, the wastewater sector will reduce GHG through direct means. The AB 32 Scoping Plan has six water sector measures proposed to reduce GHG emissions, some of which impact the wastewater sector. Innovations in this industry have the potential to lead to further GHG reductions if funds are available, through an offset program, for instance. In this way a portion of the GHG reduction required by AB 32 can be obtained from wastewater, but only if it remains uncapped.

We thank you for this opportunity to provide you this information about our industry and look forward to discussing these issues with you further. We respectfully urge you to consider our comments. If you have any questions or comments, please contact Daniel McGivney at (951) 928-3777 ext. 6329 or Randy Schmidt at (925) 229-7333. Thank you for your consideration.

Sincerely,

A handwritten signature in black ink that reads "Bridget Barker for". The signature is written in a cursive, flowing style.

California Wastewater Climate Change Group

cc: Chuck Shulock
Kevin Kennedy
Richard Bode

Solid Waste Industry for Climate Solutions

*County Sanitation Districts of Los Angeles County
Rural Counties' Environmental Services JPA
Kern County Waste Management Department
OC Waste & Recycling
Norcal Waste Systems
Republic Services
Waste Connections
Waste Management*

March 10, 2009

Lucille Van Ommering
California Air Resources Board
Stationary Source Division
1001 I Street
P.O. Box 2815
Sacramento, CA 95812

Via Email: lvanomme@arb.ca.gov

Subject: Comments Regarding Inclusion of the Waste Industry in a Cap-and-Trade Program, and the Definition of Biomass

Dear Ms. Van Ommering:

We would like to offer our thanks for this opportunity to provide additional comments on the issues raised during the February 18, 2009 Cap-and-Trade Program Design Technical Stakeholder Working Group Meeting. We look forward meeting with you later in March to further discuss the issues raised in our comments and in the correspondence.

The undersigned are representatives of an informal organization of solid waste management and recycling organizations known as the Solid Waste Industry for Climate Solutions (SWICS). The entities represented by this organization provide comprehensive waste management, biomass energy and recycling services throughout California. The purpose of this organization is to provide Climate Change policy makers with the most accurate information about our industry and our potential contributions to climate change solutions.

CARB is proceeding with development of a "cap and trade" program under AB 32, and held a workshop on February 18, 2009 to discuss program design – *Greenhouse Gas Reporting in a Cap-and-Trade Program*. The stated purpose of the meeting was:

Identify issues related to greenhouse gas emissions reporting for the cap-and-trade regulatory development process

The meeting purpose was further expanded, as detailed in a slide bullet point:

Reporting biomass emissions – beginning the conversation

Finally, later in the meeting, the audience was asked to provide, in writing, feedback on the definition of “biomass”.

While we agree with the need to define and clarify the treatment of biomass in CARB’s GHG initiatives, SWICS is concerned about the process outlined at the February 18, 2009 meeting. We have been asking for clarification for some time now on the status of a decision regarding whether the solid waste management sector was in or out of a cap-and-trade program. Representatives of the wastewater management sector have asked a similar question. Responses to these inquiries from CARB staff and from staff at the Western Climate Initiative have been inconsistent and confusing. Despite this lack of clarity CARB proceeded with the February 18 meeting with the purpose, as outlined above, that the biomass reporting issues (and thus the biomass facilities?) are being treated within the Universe of a cap-and-trade program. Further confusion comes from the slide bullet point cited above that states we are “beginning the conversation” of “reporting biomass emissions” in a cap-and-trade program. Why is this conversation happening before we know how the sectors are to be treated?

SWICS certainly believes it is important to agree on definitions, such as “biomass” and “biogenic”, but these definitions should be determined within the context of the program design and after determining whether our sector is in a cap-and-trade program. We appreciate the tremendous burden CARB staff is under to formalize complex programs under a very tight schedules, however, the very important questions posed here are crucial to the economic viability of our industry and to our ability to support real GHG reductions at our facilities.

The purpose of this letter is to provide an overview of SWICS position regarding the inclusion of the waste management sector in a cap-and-trade program, and to be responsive to CARB’s request to provide feedback on the definition of biomass. A discussion of the biomass definition is attached as an appendix to the main letter.

Overview

SWICS believes that the waste management sector should be fully excluded from a cap-and-trade program. We agree with the findings of the House Committee on Energy and Commerce report, *Climate Change Legislation Design White Paper* dated October 2007 ([http://energycommerce.house.gov/Climate Change/index.shtml](http://energycommerce.house.gov/Climate%20Change/index.shtml)). The document concludes that landfills, and other sources in the waste sector, generally do not lend themselves to regulation under cap and trade programs based on the difficulty in measuring the direct emissions accurately. In support of this conclusion, we offer the following factors for your consideration:

1. Carbon contained in waste is managed in an integrated system of recycling, re-use, composting, combustion, landfilling and in many cases renewable energy and fuel production.

2. Waste is a “must manage” product of society making the waste industry an essential public service. Wastes are not generated by the solid waste industry or the wastewater treatment industry. Rather, we are responsible for safely and protectively managing wastes that generated by some other residential, commercial or industrial activity.
3. The flow of waste to individual management options is a function of economics and policy (e.g., legislatively driven diversion rates and local government diversion requirements). The pattern of flow (e.g., amount of recycling or landfilling) is generally beyond the control of individual owner operators, and any change to this system, comes slowly due to facility permit restrictions and a lengthy permit revision process.
4. Overall waste generation can increase or decrease over time due to factors such as population, economics and consumer habits. These changes are often not predictable such as with the current economic crisis that has significantly reduced waste generation.
5. Carbon within this system, both biogenic and anthropogenic, follows a complex life cycle of energy usage and savings, and emissions and sinks. Precise calculations to define the parameters of the complex lifecycles are very site and region specific, lack any precision and subject to significant debate. In fact a comprehensive organics (including biomass) life cycle analysis is being conducted by the Integrated Waste Management Board but will not be completed for at least 12 months.
6. Waste management provides a valuable alternative energy source in the form of biogas and waste-derived biomass. Compared to fossil-derived fuels, this energy source has a low carbon intensity and fits within the realm of a low carbon fuel standard.
7. The combustion of biogas and waste biomass result in biogenic CO₂, part of the natural short-term carbon cycle.
8. Within the waste management system, a significant amount of carbon is locked up in long-term storage (e.g., carbon sequestration in landfills or in soils from compost).
9. The waste management system, in addition to biogenic CO₂ emissions, also results in some direct anthropogenic emissions, however:
 - a. Methane emissions, such as fugitive methane from landfills, are controlled through stringent existing regulations and additional regulation proposed under the AB32 Scoping Plan, which in the opinion of the landfill industry stretches the limit of landfill gas collection.
 - b. Use of supplemental fossil fuels, typically natural gas, is unavoidable because of the variable nature of biogases and waste biomass. Examples of supplemental natural gas usage includes: 1) natural gas to provide flame stabilization when methane levels of landfill gas are reduced because of the age of a landfill or excess air intrusion due to high system vacuum – flame stabilization allow proper destruction of trace toxics; 2) small additions of natural gas in some instances allow for the use of energy recovery devices rather than simple flaring with no energy recovery; and 3), natural gas stabilizes and minimizes emissions from waste incineration when difficult to burn loads are received, such as wet waste. In many instances the use of supplemental natural gas is required by local permit to ensure minimal criteria pollutant or trace toxic emissions, but in all instances, local regulations or other contracts limit the use of these fuels. The supplemental use of these fuels within these applications is variable and not predictable.
 - c. Combustion of waste biomass, such as municipal solid waste, results in largely biogenic CO₂, but can result in some anthropogenic CO₂ due to fossil fuel-derived waste, such as plastics. The amount of anthropogenic carbon released is difficult

to measure with any accuracy and would vary over time depending upon the composition of the waste stream. The composition of the waste stream is generally not under the control of the facility owner/operator. Despite these emissions, waste-derived biomass is an alternative energy source that displaces fossil fuel-derived energy.

10. The landfill industry has already reduced GHG emissions by approximately 11% since 1990 and is poised to do even more under the early action methane control measure regulations under development.
11. Overall the solid waste industry has accomplished tremendous reductions of GHG emissions from the activities for which we are responsible. As documented in the attached peer reviewed paper on the Journal of the Air and Waste Management Association. As documented in that paper, since 1974, greenhouse gas emissions from our sector have been reduced by 75% while total generation of solid waste for which we provide services has more than doubled. No other major industry group in California or North America can make a similar claim for the goods or services they provide.

Putting it all together:

One of the basic elements of a cap-and-trade system is the ability to provide accurate measurement of emissions to assure accountability and integrity of allowances. As shown above, a characteristic of the waste industry is the difficulty in providing precise estimates of GHG emissions or sinks. Couple this with the lack of control over waste streams by individual owner/operators, and you have situation where the integrity of allowances in the waste industry would be questionable.

In addition, the waste industry is subject to substantial direct state and local regulations that already work to minimize and reduce GHG emissions, and in many instances facilities are required in its operations to use supplemental fossil fuels. As described above, since the flow of waste to any individual facility is beyond the control of an individual owner/operator, “fuel” shifting to control GHG emissions (assuming this can be accurately determined) is not possible. In fact, waste-derived biomass produces a renewable fuel with low carbon intensity. As a result of these inherent constraints, if included in a cap-and-trade program, an individual facility owner/operator would have no opportunity to further reduce GHG emissions and would have no choice except to continually purchase allowances in the marketplace.

Waste management is an essential public service. If included in a cap-and-trade program, and the solid waste industry’s only choice is to purchase allowances on the open market, these services would be subject to credit variations and availability, and instability in the allowances marketplace. Including the solid waste sector in a cap-and-trade program places essential public services at a fundamental competitive disadvantage in the marketplace because of the industry's ties to public funding and municipal contracts will not allow the quick actions needed in a competitive credit market. All these factors would severely limit the waste industries ability to provide an essential public service.

In summary, the waste management sector should not be included in a cap-and-trade program, and has been, and will continue to be a better fit for “command and control” regulations. Inclusion in a cap-and-trade program can lead to disruptions in the waste management system, an

Lucille Van Ommering
March 10, 2009

important essential public service. Innovations in this industry that can lead to further GHG reductions, beyond regulation, will occur only if funds are available, through an offset program for instance, to provide for the necessary research and development.

Thank you for the opportunity to provide these comments for your consideration. Please contact any one of the undersigned if you have questions.

Sincerely,

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cc: Kevin Kennedy, ARB, kkennedy@arb.ca.gov

Attachment: Weitz, et al; "The Impact of Municipal Solid Waste Management on Greenhouse Gas Emissions in the United States", Journal of the Air & Waste Management Association, Volume 52, September 2002

Biomass Definition

There are at least 3 major GHG issues associated with the management of biomass:

- GHG emissions from the combustion of biomass used as a source of energy or fuel.
- Storage of sequestered carbon in harvested biomass.
- How GHG reduction offsets may be generated by alternative energy sources using biomass fuels (and other non-biomass sources of renewable energy) to displace the use of fossil fuels.

The workshop on February 18, 2009 really only addressed the first of the above 3 bullets. SWICS believes that all three will need to be addressed.

GHG Emissions from Combustion of Biomass for Energy

As our representatives discussed on February 18th, there seems to be 2 basic categories of Biomass Energy:

- Waste derived biomass
- Harvested biomass

With respect to waste biomass, the solid waste industry believes that the combustion of waste biomass should be viewed as carbon neutral. That is, CO₂ emissions from the combustion of waste biomass should not be viewed as contributing in any way to climate change. These CO₂ emissions from waste biomass are part of the near term carbon cycle and when diverted from traditional waste management methods are a source of biomass combustion for energy that do not generate anthropogenic CO₂ emissions. Rather, emissions from these sources should be viewed as an extension of the near term carbon cycle and not subject to inclusion in caps. Further, waste biomass to energy should be eligible to generate offset credits due to the displacement of fossil fuel energy production. Sources of carbon neutral waste biomass include landfill and sewage digester gas, biomass to energy facilities, that portion of waste-to-energy combustion that processes biomass, anaerobic digestion, and the thermo-chemical conversion of waste biomass to fuel or energy.

We strongly urge you to familiarize yourselves with the IPCC protocols on waste combustion (http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/5_Volume5/V5_5_Ch5_IOB.pdf). In particular, please note the following excerpts from this document:

Consistent with the *1996 Guidelines* (IPCC, 1997), only CO₂ emissions resulting from oxidation, during incineration and open burning of carbon in waste of fossil origin (e.g., plastics, certain textiles, rubber, liquid solvents, and waste oil) are considered net emissions and should be included in the national CO₂ emissions estimate. ***The CO₂ emissions from combustion of biomass materials (e.g., paper, food, and wood waste) contained in the waste are biogenic emissions and should not be included in national total emission estimates.*** However, if incineration of waste is used for energy purposes, both fossil and biogenic CO₂ emissions should be estimated. ***Only fossil CO₂ should be included in national emissions under Energy Sector while biogenic CO₂ should be reported as an information item also in the Energy Sector.***

This language clearly indicates that the intent is only to recognize the components of fossil origin in GHG emission inventories. The biomass fraction of waste should be view as "biogenic" and part of the near-term carbon cycle. Our sector does not mind reporting biomass emissions from combustion -- but they should not be included in inventories or regulated under cap and trade. Also note the following:

The common method for estimating CO₂ emissions from incineration and open burning of waste is based on an estimate of the fossil carbon content in the waste combusted, multiplied by the oxidation factor, and converting the product (amount of fossil carbon oxidized) to CO₂. The activity data are the waste inputs into the incinerator or the amount of waste open-burned, and the emission factors are based on the oxidized

carbon content of the waste that is of *fossil origin*. Relevant data include the amount and composition of the waste, the dry matter content, the total carbon content, the fossil carbon fraction and the oxidation factor.

As an example of the apparent misunderstanding of waste biomass I suggest you look at the recent report posted on the CARB's LCFS web site regarding, "**Landfill Gas to CNG**" (http://www.arb.ca.gov/fuels/lcfs/100808lcfs_lfg.pdf). Although the source is totally waste biomass fuel (landfill gas) the report still counts the CO₂ emissions from the displaced flaring of the landfill gas as well as the CO₂ emissions from the combustion of the produced CNG that is used as a fuel. Although the overall carbon intensity is very low, it still mischaracterizes the fact that the waste biomass source of the fuel should be considered "carbon neutral" and the CO₂ emissions derived from the combustion of landfill gas and CNG derived from landfill gas should not be counted at all. Only the portion of fossil energy used to produce the LFG to CNG fuel (if any) should be included in determining the overall carbon intensity of CNG produced from LFG.

With respect to **harvested biomass** should be differentiated from **waste biomass** -- although we acknowledge that, in some cases, the distinction may be difficult to clearly define. Biomass that is derived from a totally waste derived source, such as landfill gas or waste digester gas, should be treated as carbon neutral and simply an extension of the near-term carbon cycle. Harvested biomass, such as mid-western corn ethanol -- which has been shown by the CARB LCFS staff to have very high overall carbon intensity, should be treated differently. The carbon intensity of some harvested biomass fuels, such as Midwestern corn ethanol, is very high due to the reliance on fossil fuels for crop production, transportation and refining of the fuel -- even though the fuel itself is biomass derived. Crops that are harvested specifically to produce a fuel should be evaluated to determine their overall carbon intensity. However fuels that are totally derived from materials that would otherwise be "wasted" should be viewed as carbon neutral. Examples of waste derived biomass fuels include: landfill gas, sewage digester gas, and food and green waste digester or gasifier gas. Forest and agricultural debris that would otherwise be wasted should be recognized as carbon neutral waste materials including: forest product mill wastes and residues, dead trees, and agricultural wastes that would otherwise decompose to produce CO₂ or CH₄. **CO₂ emissions from totally waste derived biomass should be viewed by CARB as carbon neutral and simply an extension of the natural near-term carbon cycle.**

GHG Reductions from the Storage of Biomass Sequestered Carbon

The CARB should also consider the impact that stored sequestered carbon has on GHG emissions and global warming. There are several activities that involve the continued storage and preservation of sequestered carbon in biomass materials. These activities include 1) the continue maintenance of in-use forest products (e.g., tables, chairs, books, wood frame houses, etc.), 2) soil carbon storage that can be enhanced by compost and mulch, and 3) landfill carbon storage. In the case of landfills, as much as 50% of the biomass materials that goes into the landfill never decomposes into a greenhouse gas such as CO₂ or CH₄. These materials are permanently stored in the anaerobic conditions of a landfill and the sequestration of carbon is permanently maintained -- thereby removing this portion of the biomass as a source of CO₂ emissions. Some recognition must be afforded those activities that continue to store significant quantities of sequestered carbon -- and thus preventing and lowering GHG emissions from these biomass sources that would otherwise occur.

For example, the solid waste industry recognizes that it is unlikely that any marketable "credits" will ever be generated for the storage of sequestered carbon in landfills. However, the solid waste industry suggests that an overall carbon balance be performed to evaluate the net GHG performance of landfill operations. In this fashion, landfills would be responsible for their net emissions of methane (GWP = 21-25), and at the same time recognized for the amount of sequestered carbon storage that is maintained and preserved in the landfill (in CO₂e with a GWP = 1) that can be used to partially offset methane emissions. CARB should consider this issue further.

GHG Reductions from Biomass Derived Energy that Reduces or Offsets Fossil Fuel Energy

CARB should also consider ways that biomass and other renewable energy sources can be further encouraged by recognizing how biomass and renewables offset the need for a like amount of fossil fuel energy generating capacity. As far as we are aware, the only imperfect tool to recognize the value of renewable energy is through the RPS program in California -- which imperfectly values the GHG benefits of biomass and other renewable energy sources. The CARB should evaluate ways that biomass and other renewable energy sources can be further encouraged and incentivized by mechanisms that recognize their full fossil fuel offsetting capability.

Summary

In summary, we recommend that CARB consider the following courses of action with respect to the GHG implications of biomass management in California:

- GHG emissions from the combustion of biomass or biomass derived fuels for energy
 - CO2 from the combustion of waste biomass or waste biomass derived fuels should be considered carbon neutral
 - CO2 from the combustion of harvested biomass should be evaluated for its overall carbon intensity as a fuel (e.g., similar to LCFS).
- GHG Reductions from the Storage of Biomass Sequestered Carbon
 - CARB should evaluate ways that biomass sequestered carbon can be reasonably and responsibly recognized as a GHG reduction strategy
- GHG Reductions from Biomass Derived Energy that Reduces of Offsets Fossil Fuel Energy
 - CARB should evaluate ways that biomass and other renewable derived energy can be directly recognized and credited for reducing dependence on fossil fuel energy

Participant Feedback on Biomass

Please submit your responses to MMattu@arb.ca.gov

Name: Lou Wilkinson

Organization: Sunshine Gas Producers

Sector: Landfill Gas Fueled Power Generation

E-mail: Lou.Wilkinson@Comcast.net

1. What principles and Criteria should guide California's biomass definition for the purposes of reporting and inclusion/exclusion of fuels under the cap?

California RPS rules include a definition of renewable fuels that includes, among others, landfill gas. Decision 07-01-039 dated January 25, 2007 before the Public Utilities Commission of the state of California titled "Interim Opinion of the Phase 1 Issues: Greenhouse Gas Emissions Performance Standard" recognizes that generation of power from landfill gas, among other fuels, results in a substantial reduction of GHG emissions. This conclusion is explained in Section 1.6 of the referenced decision. It is imperative that any Cap-and-Trade rules recognize landfill gas fueled power generation as carbon neutral and exempt from any requirements regarding GHG emissions mitigation. Any economic penalties levied on landfill gas fueled power generation facilities would not only cause negative GHG emissions to increase, but would negate the economic benefits anticipated in the recently revised RPS legislation.

2. Should the ARB definition take into account the other working definitions? Consistency across RPS, RFS, LCFS and WCI.

Definitions should be consistent with other definitions to ensure the objectives discussed above are met.

3. What reporting provisions should be considered regarding data collections, measurement, emission factors, etc.?

Reporting requirements should be reasonable, but not overly burdensome to the generator. Reporting should be limited to that data necessary to confirm the project meets the standards described above.